

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

In applicant's specification, page 10, lines 10-12, applicant refers to "Figure 1" which is not provided. Applicant is required to submit Figure 1.

Drawings

2. The subject matter of this application admits of illustration by a drawing to facilitate understanding of the invention. Applicant is required to furnish a drawing under 37 CFR 1.81(c). No new matter may be introduced in the required drawing. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 2, "undersideof" is vague and indefinite.

In claim 1, line 3, "proteted" is vague and indefinite.

In claim 7, line 3, "NaOII" is vague and indefinite.

In claim 7, lines 3-4, "such as for example" is vague and indefinite because it is unclear how the material other than oxidizing acid has to resemble the specified material to satisfy the limitation of the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 10-15, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Hiraishi et al. (US 6,506,260).

In a method of cleaning photovoltaic module (solar cells), Hiraishi discloses treating one side of silicon wafers in a liquid bath, characterized in that the under side of the silicon wafers is treated in the liquid bath without the top side previously having

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been protected or masked. The silicon wafers may be processed continuously in a once-through process. The undersides of the silicon wafers may be lowered into the liquid bath. The silicon wafers may be conveyed horizontally through the treatment liquid located in the liquid bath. The liquid bath used is a tank whose peripheral edge may be lower than the level of the treatment liquid. The edges of the silicon wafers may be also treated. The production line may comprise a multiplicity of conveyor rolls. The conveyor rolls may be in each case arranged on axle elements. See abstract, col. 1, lines 19-23, 62-63, and Fig. 1 and its description in spec.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7-9, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraishi et al. (US 6,506,260).

In a method of cleaning photovoltaic module (solar cells), Hiraishi discloses treating one side of silicon wafers in a liquid bath, characterized in that the under side of the silicon wafers is treated in the liquid bath without the top side previously having been protected or masked. The silicon wafers may be processed continuously in a

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once-through process. The undersides of the silicon wafers may be lowered into the liquid bath. The silicon wafers may be conveyed horizontally through the treatment liquid located in the liquid bath. The liquid bath used is a tank whose peripheral edge may be lower than the level of the treatment liquid. The edges of the silicon wafers may be also treated. The production line may comprise a multiplicity of conveyor rolls. The conveyor rolls may be in each case arranged on axle elements. See abstract, col. 1, lines 19-23, 62-63, and Fig. 1 and its description in spec.

Hiraishi discloses treating (cleaning) silicon wafers in a liquid bath. Since the cleaning and etching may use the same process and system with different chemicals in treatment, it would have been obvious to one with ordinary skill in the art to vary chemical composition for treatment so as to etch the silicon wafers if the etching is required for the product.

The above cited claims differ from the prior art by specifying well-known features (such as commonly used etchants in claims 7 and 8; use additive for binding the gas formed during the etching so as to avoid or suppress gas bubbles in claims 9 and 18; encapsulate the axle element for the protection in claim 16) to the art of wet cleaning and etching, the examiner takes official notice. A person having ordinary skill in the art would have found it obvious to modify the prior art by adding any of same well-known features to same in order to provide efficient cleaning or etching with a reasonable expectation of success.

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7. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Doolittle (US 6,015,462).

In a method of etching semiconductor wafers, Doolittle discloses treating one side of silicon wafers in a liquid bath, characterized in that the under side of the silicon wafers is treated in the liquid bath without the top side previously having been protected or masked. The silicon wafers may be processed continuously in a once-through process. The undersides of the silicon wafers may be lowered into the liquid bath. See abstract, col. 3, lines 6-11, col. 5, lines 20-30.

8. Claims 1-4, 6, 7, 10-12, 14, 15, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Wandel et al. (US 6,306,224).

In a method of treating semiconductor wafers, Wandel discloses treating one side of silicon wafers in a liquid bath, characterized in that the under side of the silicon wafers is treated in the liquid bath without the top side previously having been protected or masked. The silicon wafers may be processed continuously in a once-through process. The undersides of the silicon wafers may be lowered into the liquid bath. The silicon wafers may be conveyed horizontally through the treatment liquid located in the liquid bath. The edges of the silicon wafers may be also treated. The production line may comprise a multiplicity of conveyor rolls. The conveyor rolls may be in each case arranged on axle elements. Etching may be carried out using

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etchant such as hydrofluoric acid. See col. 4, line 54 through col. 5, and Fig. 1 and its description in spec.

9. Claims 5, 8, 9, 13, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wandel et al. (US 6,306,224).

In a method of treating semiconductor wafers, Wandel discloses treating one side of silicon wafers in a liquid bath, characterized in that the under side of the silicon wafers is treated in the liquid bath without the top side previously having been protected or masked. The silicon wafers may be processed continuously in a once-through process. The undersides of the silicon wafers may be lowered into the liquid bath. The silicon wafers may be conveyed horizontally through the treatment liquid located in the liquid bath. The edges of the silicon wafers may be also treated. The production line may comprise a multiplicity of conveyor rolls. Etching may be carried out using such as hydrofluoric acid. See col. 4, line 54 through col. 5, and Fig. 1 and its description in spec.

As to dependent claims 5 and 13, since the fluid is continuously circulated and overflows, the fluid level may be adjusted depending on the surface tension of the etching medium used, as such, the liquid bath used is a tank whose peripheral edge may be lower than the level of the treatment liquid.

The above cited claims differ from the prior art by specifying well-known features (such as commonly used etchants in claim 8; use additive for binding the gas formed during the etching so as to avoid or suppress gas bubbles in claims 9 and 18; encapsulate the axle element for the protection in claim 16) to the art of wet cleaning

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and etching, the examiner takes official notice. A person having ordinary skill in the art would have found it obvious to modify the prior art by adding any of same well-known features to same in order to provide efficient cleaning or etching with a reasonable expectation of success.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kin-Chan Chen whose telephone number is (571) 272-1461. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kin-Chan Chen/
Primary Examiner, Art Unit 1792

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